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GENERAL INFORMATION



Irrigated Potatoes

MARCH 1950

SOIL CONSERVATION

OFFICIAL ORGAN OF THE SOIL CONSERVATION SERVICE

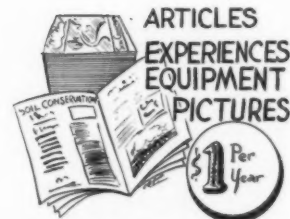
SOIL CONSERVATION

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☆ THIS MONTH ☆

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WELLINGTON BRINK
Editor
Art Work by
W. HOWARD MARTIN

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ASSOCIATION RECOMMENDS MAGAZINE.—In a report to the Washington State Association of Soil Conservation District Supervisors, President R. B. Webb makes the following suggestion:

"If you are interested in soil and water conservation, I suggest you subscribe to the SOIL CONSERVATION Magazine. This is the very best publication of its kind and the subscription is only \$1 per year for the 12 monthly issues. It is written in popular nontechnical style. There are about five feature articles each month, as well as short items from all parts of the country. There are articles about soil conservation districts; individual farmer experiences; new conservation equipment; and grass, legumes, trees, etc. The magazine includes many fine pictures.

"In addition to each district supervisor subscribing, the district might give subscriptions to new cooperators, or as prizes, or to schools."



FRONT COVER.—Russell Baum is seen irrigating potatoes grown on contour on his father's farm 4 miles east of Ashton, Idaho, in Fremont County. In the background may be seen golden wheat protected by an excellent windbreak.

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PIONEERING

in Grass



Above: Hugh Bennett, chief of the Soil Conservation Service, and Colin D. Gunn, State conservationist, in a field of Pangolagrass which W. H. Harrison saved for a nursery. Left: Carpetgrass being plowed up on Harrison ranch in preparation for better grasses. Right: Purebred brahmas on Pangolagrass pasture.

By R. Y. BAILEY

UNTIL very recently most local cattlemen took a slim view of the possibilities of growing better grass on the old prairie lands of south Florida.

It was in 1945 that Jim Weir and Eddie Myers helped to plant the first patch of improved grasses on the Parker Brothers ranch. Cowboys watched them skeptically—and why not? It had been common practice since the country was settled to burn the range lands at the time experience had shown was best for greening up the grass. They had built a big cattle business on these unimproved ranges. Also, the climate was against the production of the improved grasses that were known up to a few years ago. During the rainy season in the summer, they got too much water for pastures and during the fall and winter dry season they often had a problem of getting enough water even to keep cattle alive.

Some of the Florida cattlemen believed something better could be done down there. They acted on this belief by organizing soil conservation districts and calling on the Soil Conservation Service for help. They were willing to try a little of almost anything that was suggested. The

big rub was that we didn't know very much to suggest.

We knew there were some differences in sandy soils and that some of them made better pasture than others. We knew that some of the new grasses like Pangola, Coastal Bermuda, and Pensacola Bahia might grow, if given proper treatment. But, we didn't know what that treatment should be. We were desperately in need of information that would work under these conditions.

H. B. Helms, assistant State conservationist, asked me to go and help them study the problems in south Florida. We went out into these districts in the winter of 1945 during the dry season and then followed up in the midst of the summer rainy season. We studied the possibilities of growing grasses of different kinds on the different sandy lands. We talked to local technicians who had been on the ground for a few months and to some of the cattlemen who had been there all their lives. We studied the grass where certain kinds of native vegetation was growing and tried to determine where the better grasses were most likely to grow.

Soil scientists who were making the conservation surveys contributed valuable information about differences in some of these sandy soils.

NOTE.—The author is chief, regional agronomy division, Soil Conservation Service, Spartanburg, S. C.

Some of these differences would escape the notice of others, but they meant something to these men who were trained in the science of making conservation surveys.

These studies led us to believe that we could help farmers pick the kinds of land that were most likely to grow the different grasses. For example, we believe the better areas, where cabbage palm and certain other native plants indicated better-than-average conditions, would be most likely to grow Pangolagrass. Pensacola Bahia had grown on some very poor, light sands and we thought it probably would grow better on the lighter, poorer land than almost any other improved grass.

We were sure that improved grass would require fertilizer, and probably lime. But we didn't know what kinds and amounts would be needed. Helms worked with the late W. E. Stokes, agronomist at the Florida Agricultural Experiment Station at Gainesville, and developed detailed plans for field trials. Local personnel in the districts selected farmers who were interested and who were willing to cooperate in putting on trials that would include several different grasses, with varying kinds and amounts of lime and fertilizer. Work unit conservationists and other field workers usually helped apply the lime, minor elements, and fertilizer, and plant the grass.

A great deal was learned from these field trials of 1945 and unbelievable progress was evident in February 1949, when I accompanied Helms, Zone Conservationist Frank Daughety, District Conservationists Dave Pittman and Jim Weir in a study of progress in the Lakeland and Arcadia work groups. Palmetto brakes had been cleared, a ton of ground dolomitic limestone and 400 to 600 pounds of complete fertilizer and a few pounds of copper and zinc per acre had been applied, and improved grasses planted.

In general, Pangola, or sometimes Coastal Bermuda-grass, had been planted on the better areas and Pensacola Bahia on the lighter, poorer sands. Results in most cases were so astonishing as to be almost unbelievable. Pangola or Coastal Bermuda-grass was mowed in July, scattered over the surface, and disked in. Usually afternoon showers may be depended upon to insure moisture for the grass cuttings. Fields that were planted in July were knee deep in Pangola by November.

Pensacola Bahia is a somewhat slower starter,

but where seed was sown during the rainy season in 1948 there was a fair stand of grass the following February. This new grass may be expected to cover the ground completely and furnish grazing the summer after it is seeded.

Much remains to be learned about the maintenance fertilizing and liming that will be needed to keep these improved grasses. Some of the local people believe that under their conditions, where the ground often is covered with water several weeks at a time during the rainy season, lime may be needed oftener than once in 5 years as we usually recommend in other areas.

Complete fertilizer at rates of at least 400 pounds per acre annually most likely will be needed for maintenance of grass stands. Some of the minor elements also will be needed. If a legume can be grown with these grasses, it may be feasible to leave the nitrogen out of the fertilizer. If pure stands of grass are to be maintained, it is logical to expect that nitrogen will be needed. Top dressing with nitrogen fertilizer in addition to the complete fertilizer may become a profitable practice.

What do the cattlemen think about these new grasses? H. W. Harrison, a rancher at Palmetto, Manatee County, is expanding his acreage of improved grasses and is very positive that these better pastures will pay. In February he showed us a group of mature bulls that had been wintered in good condition entirely on Pangola and Pensacola Bahia grasses that were protected from grazing during the latter part of the rainy season so that they made heavy top growth. This system of wintering cattle on standing, dry grass may be one of the most important developments in cattle production and pasture improvement in southern Florida.

Harrison's plan, as it is being developed on the ground, is following a pattern of using the better lands for Pangola and the poorer sands for Pensacola Bahia. He also plants "torpedo grass" (*Panicum repens*) around the edges of ponds and likes this grass for such sites.

I asked Harrison which two grasses he would choose if he could have only two. After a thoughtful pause, he said, "Give me three, Pensacola Bahia, Pangola, and torpedo." Incidentally, torpedo grass is considered a rather dangerous pest if it is allowed to get into cultivated land. Several of the cattlemen of southern Florida like this grass, particularly for planting around pond

borders, and are using it rather extensively on these wet sites.

H. H. Parker, who is head of Parker Brothers big ranch, thought enough of the idea of making better pastures to hire Eddie Myers, former work unit conservationist at Arcadia, to help carry out the soil and water conservation plan that Myers had helped prepare. While we were there in February a specially built plow was cutting the scrub palmetto a few inches below the ground line. A heavy disk was following to chop and tear up the palmetto further, in preparation for establishing part of the thousand acres of new pasture that is the annual goal on this ranch.

A battery of truck spreaders was distributing maintenance fertilizer on pasture that was established in 1947 and 1948. Parker is watching these improved pastures very closely and is checking his returns to see if they are going to pay. He told me that he was beginning to believe it might pay him to put on two applications of fertilizer each year. This is a long way for a cattleman to go from the old practice of using only the native grasses on the unimproved range.

Parker was very proud of one field where about a hundred bulls had been wintered in good condition on Pensacola Bahiagrass and Pangola. The only other feed these bulls had was citrus molasses, a byproduct of citrus juice plants.

He likes what he has seen to date, but Hooker Parker has not let his enthusiasm for better pastures make him forget that he is spending good money in the development of these pastures and that the extra grazing must pay this money back with a profit. If the pastures pay, he will continue to increase the acreage in improved grasses. His faith in what is being done is worth a great deal in getting a soil and water conservation program properly planned and developed in southern Florida. He has been a supervisor of the Peace River Soil Conservation District since it was organized and his influence is important over that part of Florida. If Hooker Parker tries new pastures and likes them, that is going to be good enough for many others.

The dry winter climate makes the use of winter legumes a very uncertain practice. This leaves summer legumes as about the only hope for adapted legumes to grow with grass on the greater part of the land in southern Florida. Hairy in-

(Continued on page 174)

POTTER DISTRICT NURSERY

By VERNAL C. MILES

WHEN a new spring comes to Pennsylvania's northern tier, Potter County Soil Conservation District, at Coudersport, and its cooperators will start to collect dividends from the district's tree and shrub nursery, a shrewd investment made for the organization by two of its directors, Ed Fisher and Rosell Leete.

This unusual district enterprise, now getting ready to produce its first crop of 50,000 seedlings, represents realization of an idea pondered a long time. Fisher finally made its fulfillment possible when he supplied the site, labor, and equipment needed to plant the Scotch and Austrian pine seed which Leete purchased to seed 4,500 square feet of bed.

Every spring, starting in 1950, the beds will turn out at least 50,000 seedlings for sale to cooperators at a price that will eventually repay the original investors, purchase seed for following years, and turn a modest profit that will be used in other directions advantageous to the district. Cooperators henceforth will be supplied at small cost with sturdy seedlings for reforestation and planting stock for Christmas trees.

NOTE.—The author is district conservationist, Soil Conservation Service, Coudersport, Pa.



"Corky" Miles checking up on third-year growth of Scotch pine in Potter District nursery near Coudersport, Pa. It will be ready for cooperators' use in the spring of 1950.



First-year growth under snow-fence protection.

The project had its inception in 1946, when the outlook for desirable tree seedlings for reforestation was dim, Christmas tree seedlings were scarce and high-priced, and the district's pocketbook was as flat as a worn dime.

Operations began on Memorial Day in 1947, when Fisher turned over the use of a class I, well-drained piece of land, comparatively free of stone, at an altitude of 2,400 feet. Normally it was suitable for potatoes, of which Potter County produces a justly famous crop. Ground used for potatoes in 1946 was chosen to get the benefits of fertilizer remaining in the soil, and the scarcity of weeds following a close-tilled crop. Preparation of the seedbed had been delayed until Memorial Day because of the need to time planting so that germination would not take place before the last freeze or frost, which usually occurs in Potter County the first week in June.

After the ground had been thoroughly disked, the seedbeds (3 feet by 250 feet) were broken with a two-bottom plow and crawler tractor. Inside track width of the crawler determined the width of each bed thrown up in one round trip by the plow. A once-over with a cultipacker firmed and leveled the beds, and a rough raking took out the few stones. After careful measurement to determine the seeding rate, the seed was broadcast, then firmed in the bed by another once-over with the cultipacker. A straw mulch then was applied before sections of snow fence, borrowed from the township, were rolled over the beds. Two men did all the work in 6 hours.

Twelve days later, after germination had taken place, the snow fence and mulch were removed.

A single strand of wire was looped around stakes and run around each bed about a foot above the top of the soil. The fence was re-laid on the wire to give shade for the young growth. Later, when the growing season had ended, the fence was removed and returned to the township for another winter's job along the highways.

Since 1947 new plantings have been made each year and Banks pine and multiflora rose have been started. The district directors and SCS technicians interested Coudersport High School boys in assisting with the work. They began as helpers for Fisher's men and have now completely relieved them and are handling all of the work, and liking it a lot.

No water has been applied, all moisture coming directly from the sky. Root growth the first year was three times greater than top growth. Next spring when the first seedling crop is lifted, the Scotch pine will average 14 inches in tops and 12 inches in root length, while the Austrian pine will be 12-12. The seedlings have a good diameter and are sturdy all-around growths because they have not been crowded in the beds.

There's room for more beds in the same field, whenever the demand for planting stock exceeds present production and justifies expansion. Ed Fisher and Rosell Leete are watching developments as closely as they scan their splendid crops of potatoes and other farm crops.

PIONEERING IN GRASS

(Continued from page 173)

digo appears to be the most promising legume that is available now. It grows on poor, deep sands where most of the other summer legumes fail, and reseeds itself. Something must be learned about its management in combination with the grasses, but progress is being made.

They've come a long way since 1945. They have a great deal to learn yet, but the people in southern Florida are "in the grass" to stay. They'll solve their other problems of fertilizing, grazing management, and the use of legumes with their grasses, just as they've learned a lot of the things they are now practicing—through field experience. Technicians and farmers have worked together and learned from each other while they were pioneering in grass.

CONTOURING SAVED THESE MICHIGAN ORCHARDS



Frank Lotyuk, of the Soil Conservation Service, and Elmer Kesterke check tree spacing in rows of orchard contoured in the fall of 1949.

By JERRY KRIEGER

WHEN Elmer Kesterke bought his farm in the hilly area south of Berrien Springs on the south side of the St. Joseph River about 14 years ago, he spent more money than he could afford getting a tractor with enough power and traction to pull a plow in his steep orchards.

First he bought a big steel-wheeled tractor, then he got a set of rubber tires for it, and finally a dealer brought out the biggest wheel tractor made at that time. All of them failed to get a two-bottom plow over some of the bad spots on the uphill pull. So Kesterke finally had to buy a track-type job in order to work several of the fields on his farm.

But this summer his big "cat" was laid up for repairs for a number of months, and Kesterke didn't even miss it. A medium-sized wheel tractor did all the work, and without too much strain.

The story is not that they are making so much more powerful tractors now, but that between the time he had to buy the crawler and now he has *changed his system of farming to go around rather than up and down the hills.*

During the last 5 years he has put over 20 acres of his sloping orchards on the contour, and his

tractor pulls the plow or sprayer on a level plane rather than uphill. This feature, however, is a byproduct of his endeavor to hold his soil in place and keep his farm in good productive capacity.

Before buying the farm, he had owned a farm near Hinchman that was as flat and level as a pool table and he didn't know what it was to lose some of his topsoil every time it rained. When he bought the new farm, he continued such practices as cultivating between rains to break the soil crust and setting out fruit in square fields. Before long, he noticed that with each rain little gullies were washed in the soil, and cultivating the soil smooth again didn't prevent deeper washing the next time.

"I didn't know what I could do," he said, "but something had to be done or I was going to lose the whole farm downhill."

When a Soil Conservation Service technician laid out contour lines for planting the first contour orchard on Kesterke's place in 1944 the lack of straight rows was too much for the hired man. He suggested Kesterke should work that field until the trees grew up because he didn't think he could follow the meandering rows.

Kesterke had the lines laid out this fall for his fifth contoured orchard, and all but one small peach orchard is now on the contour in the hilly

NOTE.—The author is farm editor of *The News Palladium*, Benton Harbor, Mich.



Kesterke indicates direction of travel in his 3-year-old contoured peach orchard. Note buffer strip in tree row and how well the cover crop is holding the topsoil.

portions of his farm. The remaining square-planted orchard will come out as soon as its best productive years are over and will be replaced on the contour.

At one place where the lay of the land logically called for orchard contours to extend some distance out into a pasture, Kesterke pulled up the fence, extended the orchard into the pasture, and put a new fence "on the contour" around where the orchard jutted into the pasture.

"I'd found you don't have to have square fields and I felt the cows could find their way around the fence all right," he said.

Along with contouring, Kesterke also adopted other soil-saving and soil-building practices, such as cover and green-manure crops, and permanent sod cover in apples.

Despite his 14 years' use of the farm, it is in much better shape today than when he bought it, and he's getting bigger yields now than he did 14 years ago.

Kesterke this year was named one of the three best soil conservation farmers in Berrien County for the Goodyear soil conservation contest.

BUDDIES HELP EACH OTHER.—After classroom discussions and several field tours to inspect conservation practices on ranches in the Spanish Peaks Soil Conservation District, war veterans in the agricultural training class at Trinidad (Colo.) Junior College have decided to take action on their own ranches.

The veterans have decided to pool their tractors, trucks,

pick-ups, and other equipment, and take turn about in doing on each ranch operated by a member of the class what seems most essential in getting a soil and water conservation program started. Numbers were drawn to determine the order of work on the several ranches, and conservation plans have been worked out with the aid of technicians assigned to assist the district.

Members of the agricultural class on which this cooperative conservation project will be carried are Oscar Barron, Stanley Barron, Jr., John Blasi, Louis Blasi, John Clark, Joe E. Garcia, George Hainlen, Herbert Hainlen, William McDonald, Jim Oberosler, Frank Peabody, Warren Taylor, Harold Thompson, Lester Turner, and Lloyd T. Winger, Jr.

Wives of the veterans have worked out plans whereby they will cooperate by serving lunches on the ranch where the conservation work is being done. This is expected to give a festive atmosphere to the occasions, as did the old-time logrollings and corn-husking bees.



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SOUTHERN RHODESIA WELCOMES OUR EXPERTS

By E. GUILLAN HOPPER

IF THERE is one part of the British Empire anxious to obtain the advice and assistance of the United States it is Southern Rhodesia. Many of our problems are similar to yours and we are young enough and sufficiently energetic to appreciate the many virtues of American methods of dealing with erosion.

In the past we have enjoyed visits from many eminent American agriculturists, including A. T. Semple, who headed the United States Economic Mission during the war, and Dr. Walter Clay Lowdermilk. We have also benefited greatly from the advice of Dr. Hugh Bennett, Chief of the United States Soil Conservation Service, who, although he was unable to visit us during his South African tour, has passed on to us the results of his experience.

We especially appreciated these visits because we know that we can expect from our guests their candid opinions. There will be no glossing over our shortcomings and if any feature of our work does draw forth praise then it will be well-merited praise and not mere politeness.

We have learned that our country is roughly the size of California but is blessed with a heavier rainfall. Our white population is less than 125,000, whereas that of California is in the region of



E. Guillan Hopper.

Note.—The author is publicity officer, Natural Resources Board, P. O. Box 70, Causeway, Salisbury, Southern Rhodesia.



Southern Rhodesia is threatened by low-priced but costly labor and by monoculture. This native boy is handling tobacco strung on sticks ready for curing in the barns.

10,000,000. We have some 2,000,000 Negroes.

There is also some relation between Southern Rhodesia of today and the Southern States of the America of 50 years ago. For one thing, our main crop is tobacco whereas that of the South was cotton. We have an abundance of labor which was described by one of our American guests as "low-priced but costly." A similar state of affairs existed in the South. Again most of our tobacco plantations are big. Estates of 6,000 and 7,000 acres are by no means unusual.

Monoculture, low-priced labor, and broad acres are all dangers regarding which our American friends have warned us. Already our leading agriculturists are pressing for the wider adoption of mixed farming methods and the reduction of farm areas.



Public demonstrations are well attended in Southern Rhodesia.

As regards the Negro, there is an increasingly evident trend towards mechanization in farming, and at the same time efforts are being made to train the native African for industrial work which will tend to raise his purchasing power and so lessen the burden on the whites.

This mechanization of Southern Rhodesia's agriculture will, when currency conditions return to normal, prove of great importance to United States machinery manufacturers. Our experience has shown us that, taking the broad view, American equipment is better suited to our conditions than are the products of factories in Britain. Our territory is like the United States, big, tough, and rough, and if it is to prove economically useful a machine has to be made to stand the gaff.

In recent years we have purchased a great number of American tractors, ditchers, scrapers, and every other kind of giant tool for handling the soil and its products. A slender stream of this equipment is trickling across our frontiers but it is not enough for our immediate needs and we have been forced to make do with British-made substitutes.

Apart from the question of machinery, our methods of tackling soil conservation problems are similar to those employed in America. We have, for instance, divided our small country into roughly 70 intensive conservation areas which correspond to your 2,000 conservation districts. Our young conservation officers possess qualifications which compare very favorably with those of the men of the United States Soil Conservation Service and the standard is being steadily raised.

Like you in America, we have found it necessary to support the actual work of conservation with



Conditions are rough and tough in Southern Rhodesia. Machines must be able to stand the gaff.

constant publicity. In this we have adopted what are recognized to be American methods. The mediums employed include radio, press, screen, public demonstrations, booklets, and both newspaper and poster advertising. Every section of the public falls into the target area—whites and Negroes of both sexes and all ages.

Acting on the belief that the schoolboy of today is the farmer of tomorrow, we have produced for him a special series of broadcasts which he listens to during school hours and at the same time has the major points illustrated by means of film strips. Cine-films showing all sides of agricultural life in the Colony are being made and exhibited to young and old all over the country and gradually we are building up a new generation which regards the conservation of our soil and water resources as normal farming operations.

(Continued on page 180)



Between flights Alvin Clements talks to a group of Future Farmers about soil texture. In one of the hangars at the Medford airport, Clements kept running continuously a movie which told the story of proper land use.

FUTURE FARMERS MAKE AIR SURVEY

By TOM DANIEL

ONE hundred fifty Future Farmers of America were surprised at the amount of erosion in Grant County—one of the richest agricultural counties in Oklahoma—when they flew in the world's first FFA aerial soil-erosion survey held at the Medford airport last fall.

The tour, sponsored by the Grant County civic organizations, began early in the morning, at which time 30 flying farmers lined up their planes and loaded them with FFA members from the communities of Medford, Wakita, Lamont, and Deer Creek. They spent 30 minutes over the area getting a bird's-eye view of good and bad land, and then over their home farms. The venture was

designed to provide a better understanding of the need for more extensive soil conservation practices.

Since the airplanes were one- and three-place crafts, each made several trips. Future Farmers awaiting their turns to fly and those who had completed the tour were instructed in the value of land conservation and utilization by Alvin Clements, area soil conservationist.

Clements remarked: "These young men are getting an opportunity to compare their home farms with other farms in the area. A more complete picture of a farm can be obtained from the air than from the ground."

Melvin Hull, 17-year-old Wakita youth, after completing the tour, said: "I am more determined than ever to do something about the soil erosion problem."

A 15-year-old Lamont Future Farmer, Kenneth Webster, after having his 30 minutes in the air, said he did not realize the amount of damage that erosion was doing to the land. "I saw deep ditches and wash-outs that I did not notice from the ground."

NOTE.—The author is executive secretary, Oklahoma Future Farmers of America, Stillwater, Okla.

In one of the hangars a movie illustrating good soil conservation practices ran continually.

At noon, long lines of FFA members, pilots, parents of the youths, and those who came to witness the venture ate barbecue which was donated by the county civic organizations and served by Medford Future Homemaking girls.

After the barbecue, the group moved from the airport to a Medford theater for the afternoon program, which consisted of addresses on soil conservation by "T-Bone" McDonald, assistant State soil conservationist, and Clements.

In keeping with the aerial aspect of the day, McDonald was flown from Chickasha to Medford and then back to Chickasha so that he could attend a soil conservation meeting there in the evening.

The program committee consisted of Clements and four vocational agriculture teachers as follows: Cleo Dupy, Lamont; Merle Chapman, Wakita; Aubrey McNally, Medford; and Clarence Bannon, Deer Creek.

SOUTHERN RHODESIA

(Continued from page 178)

For the native African farmer we produce a trilingual agricultural newspaper from which the Negro learns the value of crop rotation, terracing, irrigation, and all the other factors that add up to good husbandry. Thirty thousand copies of this newspaper are distributed every 2 months and each copy passes through more than 12 pairs of hands.

Next year we celebrate Southern Rhodesia's "Diamond Jubilee" and we are marking the occasion by adopting yet another old American custom, Arbor Day, but we are calling it Conservation Day. On this day our young folk will be encouraged to plant trees, they will attend agricultural demonstrations, film shows, and lectures. Some of them will be taken out onto the farms where they will be the guests of the farmers and shown around tobacco estates, dairy farms, tea gardens, and cotton plantations.

We have many ancient links with the United States. One of them was forged by our founder, Cecil John Rhodes, when he established the famous Rhodes Scholarships. Another is the fact that in the original pioneer column which first hacked its way into the heart of our country there were at least a couple of American citizens!

The full development of our agricultural resources, however, is largely dependent on the

development of various hydroelectric and transport projects. At the moment these schemes involve capital investment of a magnitude that cannot possibly be shouldered by a population as small as ours.

SEQUEL TO A FACE LIFTING

IN ONE year installation of a complete conservation farm plan increased the value of Mrs. Nellie Thrasher's 175-acre dairy farm near Frederick, Md., from \$13,625 to \$26,400. The Frederick County Pomona Grange sponsored the historic Thrasher farm face lifting August 18, 1948. The same two appraisers, fully experienced in Maryland land values, made the appraisals, and what they found has been affirmed by others.

Entirely separate from this appraisal, a disinterested committee of three farm-crop experts made its annual check of the farm's production and presented a report, confirmed by two county agents and an independent farm manager, which cites "little less than miraculous results."

After noting that from 1943 through 1947, the farmer had annually bought from 2 carloads to 36 tons of hay, they observed that no such purchases were necessary in 1949. Here is an index to the reason for this—

Fifteen acres of alfalfa, in excellent condition, that will produce a third cutting, yielding one-half ton per acre.

Ten acres of mixed grasses, in excellent condition, that will yield a second cutting; estimated yield one-half ton per acre.

Twenty acres of permanent bluegrass and white-clover pasture; completely sparse in 1948, but in excellent condition in 1949 with a carrying capacity 10 times as great as it was in 1948.

Fifty-nine acres of rotational pasture with excellent coverage of orchardgrass, alsike, Ladino clover and Korean lespedeza. This area is a hillside leading to mountain. A year ago it contained very acute erosion with definite gullies and was completely bare except for a very small growth of lespedeza.

The committee also found these crop comparisons for the 2 years—

Hay: baled—36 tons and 345 pounds; loose—50 tons; more to be cut at time of inspection.

Wheat: 18 acres, 26.4 bushels per acre; 18 bushels per acre in previous years, except 1948 when crop was complete failure.

Corn: 18 acres in excellent condition promising very good yield; 40 bushels per acre in 1948.

Oats: 12 acres, 40 bushels per acre, materially affected by weather.

Barley: 6 acres, 20 bushels per acre; 16 $\frac{3}{4}$ bushels per acre in 1948.

Milk: Reduction of about 12 $\frac{1}{2}$ percent in cash return, approximately the same reduction as in the number of milking cows. Substantial reduction in price of milk has been offset by increased production per cow and improved market rating resulting from new barn.

The report of this crop committee's findings is supported by letters to the Thrasher farm advisory committee by two county agricultural agents and the manager of a large private farm.

H. R. Shoemaker, Frederick County, Md., county agricultural agent, wrote: "I was surprised at the abundance and quality of the pasture. The improvement in yield and quality since a year earlier is little less than miraculous."

Warren C. Myers, Howard County, Md., county agricultural agent, wrote: "In general, crops such as corn, hay, and small grains were above the average for farms in this particular area. Much of the improvement can be attributed to planting

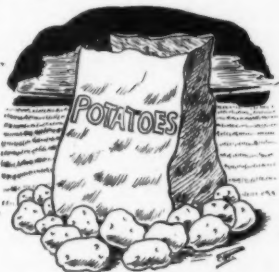
on the contour, which aided materially in reducing the loss of water and soil. People who are familiar with this farm and to whom I have talked, agree that soil conservation practices have done much to improve quality and quantity of crops on this farm."

W. R. Powel, manager, Doughoregan Manor Farms, Ellicott City, Md., wrote: "Crops seemed to be doing particularly well. Corn compared favorably with what I had seen on better farms in Frederick County. Although barns were bulging with hay, alfalfa strips were coming back strongly to make a new cutting. Hay-type and permanent pastures were in fine shape. The previously badly eroded hillside, seeded to pasture a year ago, was producing a remarkable amount of forage. I was very much impressed by the condition of the place as a whole."

Editorially, the Baltimore Sun commented: "The important permanent factor in the Thrasher farm project is neither the increased valuation nor the total of this year's crops. It is that, through the introduction of conservation measures, the topsoil which used to be washed away in heavy rains now is being held in place. That is important not only to Mrs. Thrasher but to everybody. It means the preservation and improvement of arable land that is essential to producing food for the Nation's growing population. It means also less good soil being washed downstream to clog our rivers and bays with silt, impede navigation, and kill marine life."

POTATO PROFITS.—Last year's yields of white potatoes gave Marvin Beakley, Blackwood, Camden County, N. J., grower, all the evidence he needed to prove that contour farming pays.

On one farm he planted half the acreage on contour and half in rows running up and down the hill. Both were irrigated. His contoured acreage yielded several more bags per row and better potatoes than he got off the "up and down" rows.



On another farm, where he planted on the contour and irrigated, he got his best yields. Irrigation water came from the new farm pond which is part of his complete conservation farm plan. The pond, with 2 acres of surface, was emptied before the irrigation job was done—1949 was a mighty dry year in Jersey—but 80 percent of the yield graded No. 1.

Beakley is the leading potato grower in Camden County, where 30 percent of the crop was irrigated this year.

THEY LIKED THE SAMPLE.—Soil conservation field days take a lot of time but it isn't all wasted, at least not in the case of the one held last September by the Story County Soil Conservation District on the Tom Kirby farm northeast of Ames, Iowa. Among the contractors who assisted with the earth-moving work was Leonard Stacker. Within a few days after the field day, Stacker received more than a dozen requests for earth-moving work from farmers carrying out soil conservation farm plans.

THE AUSTRALIANS USE AN "ABSORPTION BANK"

By WILLIAM A. ALBRECHT



Natives are taught terracing and 11 other accepted practices.

THE WORD "bank" is the Australian equivalent of our terrace. Soils in Australia erode seriously during the few "wet" months of the year, after which they must suffer in a different way during the many dry months that follow. The terrace, therefore, serves both as a water-holder for the dry season and as a water-remover when there is excess rainfall. However, this "holding of water" is practiced usually on the uncultivated area above the area which is eroding severely because it is under cultivation.

Since forests once prevailed extensively over much of the areas needing attention to combat erosion now, extensive areas are still in forests on the steeper slopes above those needing to be terraced. As a consequence, the Australian soil conservators are using what they call an "absorption bank" along the lower edge of the forest, and just above the cultivated terraced area. This "bank" is an enlarged terrace. However, it is built on the level. It is of sufficient height to make it the equivalent of a dam in front of a long, narrow pond on the upper part of the slope. This "bank"

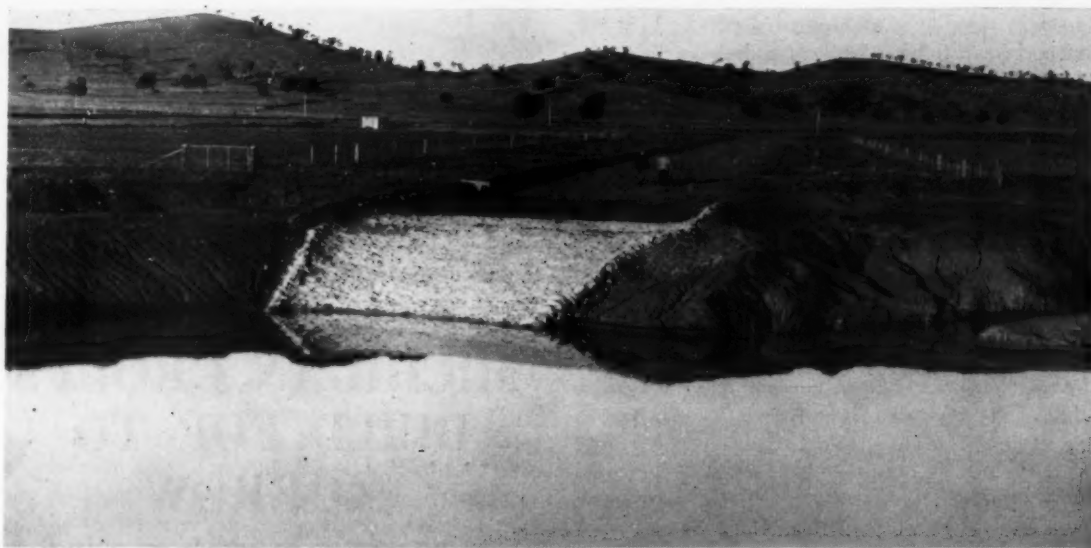
is designed to overflow at one end onto a grassed waterway during high rainfall. But the volume of water which it holds is intended to carry over into the period of low rainfall while it is seeping slowly down the hillside within the soil and serving as partial equivalent of subsoil irrigation for the lower part of the slope. At the other end of the bank there may be built an extra pond in order to store still more water for other services during the drought period. This pond also may overflow onto the grassed waterway.

While these "absorption banks" are thrown up to what seems to us rather high, the terraces in the fields are generally not built up to any significant degree. They are usually made with a plow. Their upper sides are relatively steep. With the extensive areas of the country in grass for sheep pasture, naturally this lower limit in amount of disturbed sod means no serious reduction in grazing areas. Also, when the returns on the land are no higher, the investment in terraces is not going to be pushed up to a big figure by moving much earth and using costly, special machinery. If it should be planned for that by the "soil conservators," as their technical leaders are

Note.—The author is chairman, department of soils, University of Missouri, Columbia, Mo.



"Contour banks" are no unusual sight in the hilly grasslands of New South Wales. Photo by L. G. Koleski, Soil Conservation, Sydney, Australia.



Grassed waterways are used to fill ponds during the wet season to provide water for the long dry one which follows. Photo by Koleski.

called, there would be all too few graziers going into action on their soil conservation program.

But with men like W. G. Wells and his colleagues in the Department of Agriculture of Queensland, and L. G. Koleski, Mr. Clayton, and all the others in New South Wales, and "Bob" Herriott in South Australia, all talking about soil conservation, there is so much of an action pro-

gram that a visitor going to Australia and given an introduction with the word "soil" connected with his name immediately gets the comment, "Oh, you are connected with soil conservation? You came to a country where we need all the help that you can give us."

The absorption bank is not a diversion ditch at the top of the slope, but, in fact, is a contour dam



The landscapes tell us that soil conservation is in action with absorption banks (A and A₁) above the upper edge of the steeper slopes and plowed terraces (B and B₁) leading into the grassed waterways (C and C₁) at the Gunnedah Research Station. Photo by Koleski.

on the lower side of an elongated pond. It is not unusual for it to be a slender pond along the lower edge of an uncultivated slope which might have a grade as severe as 30 percent. It is usually overgrown as quickly as possible by seeding it to the tall-growing, heavy-rooting Rhodesgrass. It is the first step in trying to keep an area below it as free as possible from any running water coming from the slope above it. It is an attempt to hold the troubles on arable or pasture areas down to those wholly their own by excluding any that might come from above it. Then, in addition, it is a help in having some soil water carry over into the dry period when no one would fight against but everybody would fight for some extra water.

Soil conservation in Australia is still a young program. It is not settled to a single or well-defined philosophy. Since the separate States have long been given to pronounced independence of each other in many aspects, it would be very unusual if they should all be following one uniform policy in soil conservation so early in their work of protecting the soil resource. They are, nevertheless, studying their broader problems seriously. The necessity of conserving water as well as soil compels this. They are expecting one of their leaders, Robert Herriott, to make a visit to the United States in 1950 to learn what he can about the conservation techniques here. He will also be studying the interests of 4-H Clubs, and the activ-

ities in agricultural extension, as all these can make soil conservation more widely appreciated and used in building the soil for a securer foundation for country life. The wide areas of Australia, made up of single sheep stations dealing in hundreds of acres, if not in square miles, tell us that Australians think in broad terms. There is every indication that they are building their soil conservation on just such dimensions. We may well follow the reports in their literature, and exchange ideas with them, for mutual benefit.

MICHIGAN GROUPS BUILD FOR TO- MORROW

By ROBERT W. GEORGE and LINDO J.
BARTELLI

GROUP action in getting soil conservation on the land has been one of the main features of the relatively young soil conservation district in Osceola County, Mich. Farmers in this district have banded together, until now there are 37 active neighborhood groups exchanging work and ex-

NOTE.—The authors are work unit conservationist, Evart, Mich., and district conservationist, Ludington, Mich., respectively.



Typical activity during soil-saving bee.



Russell G. Hill, executive secretary of State Soil Conservation Committee, talks in field on value of working in friendly neighborhood groups.



District directors, farmers, and technicians working out plans for the Kohn farm.

periences in putting their land under good soil conservation farming.

The extent of this neighborly action and its degree of effectiveness was well shown in August by the Cedar Township group. This group, working with the district directors, the Soil Conservation Service, the Extension Service, and the State Conservation Department, staged a "Bee for Saving Soil" at the farm of Charles Kohn, a member of the Cedar Township group. A complete remodeling job was done by the group with assistance from other interested cooperators in neighboring areas.

As dawn broke over the hilly 80 acres one morning last August, Charlie's farm lay in 14 small, unevenly divided fields, more or less square. The only concession to topography and soil type was that land too wet to plow was in grass or willows. Around 9 o'clock in the morning, Charlie's neighbors began arriving with their farming tools. They came to help Charlie remodel his farm. Art

Truax brought his team and drag; Wilbur McIntyre, a tractor, field cultivator, and lime spreader; Verger Wood, a tractor and field cultivator; Earl Apsey, a tractor, plows, and field cultivator; Ferris Leach, a tractor and plow; Bob Johnson, a tractor and plow; and Kent Boyd, a tractor, plow, and disk.

This crew was reenforced by two bulldozers, a crawler tractor, and a district muck plow. Farm tractors with plows constructed terraces to divert water from hillsides into sodded waterways to carry it downhill without erosion. Other farm tractors worked upland broken by the muck plow. Another tractor with disk and field cultivator worked up new ground leveled by bulldozers for pasture. Long before sunset, when the work was done, Charlie's cropland had grown from 52 to more than 60 acres and the 14 fields had disappeared. In their place lay strips of land that followed the contour of the hills in a winding fashion, that allowed similar soil types and land of similar slope to be farmed together across the slope of the land. Idle land not suited for farming was improved to provide cover and food for wildlife. Land best suited for crop use was available for crops, and land most suitable for pasture was in pasture. More than a thousand farmers from the district observed this successful demon-



Barney Vanderveen chats with Charlie Kohn during the bee.

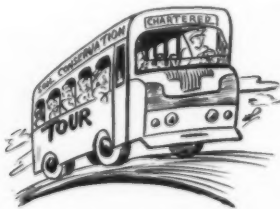
stration of soil conservation farming. The main reason for the success of this day was due to the cooperative spirit shown by Charlie's neighbors.

Since the board of directors has put a major emphasis on group planning, it wanted to show that a soil and water conservation plan developed through group action also could be effectively applied on the land through the same neighborly spirit. The board took an active part in planning the soil-saving bee. Nelson Rogers, chairman, assumed the responsibility of being general chairman of the day. Director Walter Johnson was in charge of equipment and material, Director Ferris Leach was in charge of the grounds committee, Director Barney Vanderveen explained the advantages of terracing and strip cropping at one of the main points of attraction, Director Peter Bontekoe handled the parking and refreshments, and County Agent W. S. Harrison handled the publicity.

Technical assistance in developing and establishing the soil and water conservation plan on Charlie's farm was furnished by men of the Soil Conservation Service. Personnel of the Michigan State Conservation Department furnished technical assistance in developing the woodland and wildlife phase.

The directors feel that this demonstration will show farmers in the district the way to establish soil conservation on the land through exchange of work and ideas between neighbors.

NOTES FROM THE DISTRICTS



FAMILY AFFAIR NOW.—The Green County district (Wis.) Homemaker Clubs, all 52 of them, became the first in the State to adopt soil conservation as a regular project. To back up their resolutions the homemakers made a tour to study first-hand the best examples of conservation work in the district. The leaders asked questions and made sure the group was informed about each project. Just let the folks at home try to escape hearing about soil conservation, now!

PICKED FOR PRIZES.—"Saved Acres" are the words that won the \$10 first prize offered for the best name for the 88-acre Peter Pennington Farm, Greasy Ridge Road, near Princeton, W. Va., where 4,000 witnessed a 1-day face lifting called "New Look" on August 10. Fred Rogers, an Athens, W. Va., high-school student, who plans a career in forestry, suggested the name. James C. Hurst, who came all the way from Tampa, Fla., to attend the event, won \$10 offered by a Princeton bank to the farmer traveling the greatest distance.

POWER OF PRESS.—Lloyd Prestidge, an Alvarado, Tex., farmer, gives credit to an editorial in the *Fort Worth Star-Telegram* for his conversion to conservation farming.

The editorial, written by N. A. Stedman in connection with Soils and Souls Sunday, stressed the moral responsibility involved in soil and water conservation. Soils and Souls Sunday was conceived and is sponsored annually by Farm and Ranch.

E. H. Varnell, district conservationist, says that Prestidge credits the editorial for his applying to the Dalworth Soil Conservation District for assistance in planning and carrying out a well-rounded conservation program on his farm.

HARNESSING A STREAM.—Supervisors of the Gila Valley (Ariz.) Soil Conservation District, assisted by Soil Conservation Service technicians, apparently have solved a problem which was created in January 1949 when a flood on the upper Gila River did considerable stream-bank cutting into cultivated fields in the Safford Valley. The Service did the engineering and the district furnished the tractors.

When large trees were available, a continuous log or tree chain was formed along the stream bank with each tree being tied to a cable stretched along the bank. In most instances a perfect stand of black-willow seedlings has sprouted and is growing in the silt trapped by the log chain. This winter, farmers whose land was being damaged are planting willows in areas that have not seeded naturally.

On the W. O. Tyler farm at Fort Thomas, black willows were the only trees available and there were not enough of these to build a tree or log chain. The only alternative was to build willow spiders, which are 5-foot poles wired together at right angles at each end of a 12-foot horizontal pole tied to a cable along the stream bank.

During the installation of the spiders, the river was still cutting into an alfalfa field on Tyler's farm. Therefore, in an attempt to speed up the job of protecting his field, Tyler left 20-foot gaps between the spiders with the idea of making a second round and building a continuous line of spiders along the entire 1,100-foot river boundary of the field. However, this proved to be unnecessary, since the original set-up of spiders gave the field excellent protection even at the sharp curve of the river. Approximately 75 percent of the willow poles used in the spiders have taken root and are growing. Tyler is planting additional willows in the gaps this winter so he can be sure that the river will not damage his field again even during the most severe floods.

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ONE COUNTY WORKS WONDERS.—Impressive changes are taking place in Lamar County, Ga. In 1947 five farmers seeking better and cheaper grazing planted a total of 16 acres of Suiter's grass (Kentucky 31 fescue). Results were so good that the next year 39 farmers planted 456 acres of the fescue. Popularity continued to grow, and in 1949 there were 1,274 acres of fescue on 103 different farms—more than 2½ percent of the county's open crop and pasture land.

But fescue does not reflect the whole story. A partner is sericea—2,614.7 acres planted by 232 farmers. This represents 6 percent of the open crop and pasture land in Lamar County.

There are also 4,700 acres of improved, fertilized, and seeded White Dutch, Dallis, crimson, lespedeza, Bermuda permanent pasture. In this there is over 10 percent of the open crop and pasture land.

The hay and seed crop from sericea alone is valued at \$3,500—more than the cotton crop was worth.

Paul D. Schumacher is soil conservationist.

PUERTO RICO PROGRAM MOVES AHEAD.—Soil conservation is moving forward rapidly in Puerto Rico's 17 soil conservation districts. In one typical month recently, 124 farm plans, comprising 4,957 acres, were prepared by SCS technicians assisting the districts and 9,500 acres were mapped by the two SCS soil scientists. Assistance was also given farmers in laying out terraces, water-disposal areas, vegetative barriers, contour farming, and tree planting. SCS engineers assisted the Land Authority Farm at Barceloneta in draining 75 acres which will be planted to sugarcane.

District supervisors sponsored a contest in which \$500 will be awarded to district farmers and 4-H Club members having the best demonstrations of soil conservation and proper land use on their farms. The contest was made possible through cooperation of the Lions Club of Mayaguez. Supervisors of the Torrecillas, Cibuco, San Juan, Este, and Norte districts are taking an active part in construction of limestone mills in their districts. Other districts are promoting an educational program through motion pictures, displays, and tours in cooperation with the Extension Service.

Soil conservation plans are being applied on the Insular Penal Colonies at Guavate and Zarzel with the active cooperation of the Insular Justice Department, which is seeking to make of the prisoners better citizens and more efficient farmers. Night classes in soil and water conservation have been conducted for the prisoners. Motion pictures and displays also are being used in the educational program at these colonies.

WHERE WATER IS PRECIOUS.—Savings up to 50 percent in volume of water used, and similar reductions in time and labor required for irrigation, have been accomplished on many Mason Valley (Nev.) farms through conservation farm planning.

A recent study of the effects of leveling and grading some 8,000 acres of farm land and revising irrigation systems and methods on 110 farms was the basis of planning irrigation improvements. The surface slope, depth, texture, and arrangement of strata in the soil determine the proper length of fields, the width of borders, and the feasibility of leveling. The size of stream in each border and how long to apply water each time are also calculated.

On one typical field before planning, 7.3 acres-inches of water (by actual measurement) were applied at one irrigation in 80 minutes. It was found that 1.5 inches was retained in the root zone of the crop and 5.8 inches lost by deep percolation.

By dividing the field into 2 runs, 3.6 acre-inches of water were applied in 20 minutes, leaving the same amount of water (1.5 inches) retained in the root zone of the crop. This is a saving of 50 percent in water used and 75 percent saving in time required for each irrigation.

On the Antone Farias farm 209 acres have been leveled and a planned irrigation system installed. Seventy-six of the 209 acres were not previously in cultivation. Farias reports that prior to this improvement it took 2 weeks each time to irrigate the entire farm. He is now able to irrigate the entire farm in 5 days, with half as much work and half as much water as previously required.

Austin Baalam cites a 13-acre field on which he raised only 350 bales of hay in 1947. In 1948 he raised 1,008 bales on the same field. He attributes the increase to more careful irrigation, including the use of considerably less water in 1948.

A stream of 6 cubic feet per second now irrigates in 6 days the same land that required 15 days before leveling and ditch revision on the farm of E. Aiazzi in the Meissner district of Mason Valley—a saving of 60 percent in water and labor.

—SUMNER HATCH

LIONS HELP.—When Wirt County, W. Va., farmers decided that they wanted to get into the Little Kanawha Soil Conservation District, the Lions Club at Elizabeth took the initiative in sponsoring two meetings. Organization of Wirt will reduce the unorganized territory in West Virginia to two small blocks—five and a half counties in all, mostly in a mining region which has relatively little agriculture.

COTTON PRODUCTION SOARS.—William Jackson, who operates a farm about a mile southeast of Artesia, N. Mex., got three bales of cotton per acre on a 19-acre field last year largely because of soil and water conservation practices centered on land leveling and crop rotations.

Jackson is a cooperater of the Central Valley Soil Conservation District.

SEED HARVEST.—Two acres of low-lying meadowland on the farm of J. Leo Seely, of Mount Pleasant, Utah, unsuited for alfalfa or grain, have been made to produce tall wheatgrass seed worth nearly \$650.

In the fall of 1947 the Sanpete Soil Conservation District furnished Seely 8 pounds of tall wheatgrass seed. The area where Seely planted the wheatgrass in rows is extremely high in lime and is subject to spring overflow; later it becomes very dry with no irrigation water available.

Seely cut the field with a binder in September 1948 and stacked the bundles. The winter of 1948 was one of the worst on record in this part of Utah, so Seely used the bundles to feed his cattle and horses. In 1949 he found a good stand of the tall wheatgrass where the bundles had been scattered.

Last September Seely cut the 2-acre field with his binder, threshed the seed, and paid 1½ cents a pound for cleaning. He returned 16 pounds of seed to the district, and retained 100 pounds, plus the cleanings, for his own use.

Seely then sold the remaining 750 pounds of seed at 75 cents a pound for \$562.50. Figuring the 16 pounds of seed returned to the district and the 100 pounds which he kept at the same price, the total seed yield from the 2 acres was worth \$649.50, or about \$325 per acre.

FOUR MORE FOR PA.—Four more counties have been added to Pennsylvania's soil conservation district total. Columbia, Erie, and Lebanon are the newcomers. Wyoming came in earlier in the year, and Westmoreland has been declared but is not yet organized.

IT PAYS TO FARM AROUND THE HILL.—Soil conservation is mighty profitable in Benton County, Iowa.

Walter Boehmke of Belle Plaine has received \$200 per acre during the past summer from his alfalfa-brome hog pasture. Dick Schild, who practically grew up farming around the hill, consistently wins the corn-yield contest sponsored by the Belle Plaine Chamber of Commerce. His yield last year was 136 bushels per acre. Harry Carr of Shellsburg estimated that his terraced field would yield more corn per acre than he had ever grown before. His oats yield was 80 bushels per acre. Daniel Bruch told the district commissioners that he hasn't lost a ton of soil from his terraced field in the last 2 years. Howard Knupp's story about the results he got from hogs feeding on Ladino clover would be hard to believe had not both soils men and neighbors watched the progress during the summer. Among soil conservation pioneers in Benton County are Wendell Merchant, whose father farmed around the hill 20 years ago, and Bill Eldridge, who farmed on the contour 23 years ago.

FERTILIZER TRIAL.—Harold and Jack Miller of the Lucas County (Iowa) Soil Conservation District got some interesting results with fertilizer applied to corn on old brome grass sod last year. The Millers plowed an old

stand of brome in the fall of 1948. Since the sod was heavy they applied 200 pounds of ammonium nitrate per acre, broadcast in the spring of 1949 when the seedbed was being prepared.

They also applied 150 pounds per acre of 2-12-6 fertilizer in the row with a planter attachment. To find out how the fertilizer affected the corn yield, Jack left some rows that received no fertilizer, some that received only 2-12-6, and some that got only the ammonium nitrate. Markers in the fence line made identification positive.

The Millers asked the Soil Conservation Service men assisting the district to help determine the yields. The corn was picked by hand from a measured length of row and the weights converted to bushels per acre.

The corn without fertilizer produced 87 bushels per acre. The rows that got only 2-12-6 produced 95 bushels per acre. The corn that received only the ammonium nitrate made 99 bushels per acre, while both fertilizers boosted the yield to 105. Figuring the increase at \$1 per bushel, all treatments were profitable. This is a case of profitable application of fertilizer where the fertility was already so high that no difference in the rows was apparent during the summer.

THE NEEDED ELEMENT.—Trace mineral enthusiasts will be interested in the experience of Milford Richman, farm planner in the Noble County (Ind.) Soil Conservation District. In October 1949 R. L. Reynolds showed Richman a lush meadow of Ladino grass. "When that field was in corn 2 years ago," said Reynolds, "we actually didn't get enough corn to cover the bottom of our crib. We have been here 3 years and never have grown a decent meadow before."

The story of Reynolds' fine meadow goes back to August when Richman suggested adding 20 pounds of borax to the 0-15-15 fertilizer Reynolds was using on part of his meadow, and 20 pounds of borax only, on another part. Now there did not appear to be any difference between the clover where the fertilizer and borax were used and where the borax was used by itself. The borax was responsible for the new luxurious growth.

Reynolds will have the kind of pasture he has long wanted for his herd of Guernsey cattle.

SEEING IS BELIEVING.—Jim Stevenson, work unit conservationist, of Baraboo, Wis., conducted a working-with-terraces clinic at the Sauk County soil conservation field day that should have wide application. Jim roped off a 200- by 200-foot area that included two terrace ridges. Using a loud-speaker, he first explained the use of terraces, how they are constructed, and some of the problems that come up in farming terraces.

Then a tractor and plow were brought into the enclosure and enough short rounds were made to demonstrate how a terrace is maintained in plowing. Next a drill, planter, and a grain binder were brought in and operated on the terraces. A mower was used to cut the grass on the unplowed terrace and this was followed by a side-delivery rake.

DISTRICTS TELL THEIR STORIES.—Ten Michigan soil conservation districts—Allegan, Van Buren, Gallien River, Lenawee, Wexford, St. Joe River, East Allegan, Missaukee, Osceola, and Mason—are conducting regular district board radio broadcasts. In the Wexford district the director interviews business and professional men. A minister, an insurance man, and a housewife took part in a recent program.

CONTEST IDEA.—The Manistee County (Mich.) Soil Conservation District is sponsoring a slogan contest for local high-school students. The district supplies each school with a set of sixteen 8- by 12-inch signs, painted and ready for lettering. The idea is to rig them up for roadside use, "Burma shave" style. The contest puts a premium on originality, quality of work, and aptness of thought. Prizes will be spruce trees for the school lawn.

MAKES BETTER NEIGHBORS.—In Joe Sena's 30-acre potato field, Worthington, Mass., rain water would come down over the field in such quantities that the pipe in the culvert, under the road at the foot of the slope, had to be increased from 4 to 18 inches. Even then, the runoff would top the road during heavy storms. Much topsoil was deposited on the road and on the lawn of a neighbor. Diversion terraces and strip cropping now, however, establish so tight a control of the water that the amount of runoff during any storm this past year would not have filled the original 4-inch pipe. Soil no longer washes onto the roadway and the lawn of Joe's neighbor. "This makes us better neighbors," he says.

LONG ROWS, PLUS.—When Frank Harris, of Shiloh, N. J., and SCS technicians working with the South Jersey Soil Conservation District came together for the planning of his farm, the first thing he asked for was long rows for his potatoes. "Make them as long as you can, and if you clear up that half-acre low spot so I can plant more potatoes there I'll be sold on the soil conservation program," he said.

The technicians delivered exactly what he wanted. With his own farm equipment and labor he built 1,800 feet of diversion terrace in the upper third of his field and followed its contoured lines in planting his crop. The yield was big and the wet spot disappeared, and he had 80- to 90-percent erosion control.

In 1949 he came back with a request for more terraces so he could plant asparagus on 33 acres. This time he wanted more than "long rows"—he wanted three terraces in a field that had very little slope, and all the controls that he could get. He planted 8 acres of asparagus to conform with the contour of two established terraces and put the other 25 acres into beets planted to the same pattern. In two or three more years he will learn what benefits controls bring to asparagus fields. By that time he will have 20 to 24 more acres planted to that crop. The beet yield this year was very good, but best of all, he had no erosion in asparagus and beets. A neighbor's field, much like Harris' but not farmed the conservation way, took a licking from washing.



Survey instruction; Donald Wilder, William Funk, Prof. Eddy Foster (at instrument), and David Sherwood. Photo by courtesy N. Y. State Agricultural and Technical Institute.

ON-THE-GROUND INSTRUCTION.—An invitation to an SCS district conservationist to assist a technical institute professor in 1944 classroom work on conservation has resulted in the development of a full-fledged 2-year conservation course in which 35 students are enrolled. The first year there were only two.

E. E. Foster is the teacher who had the idea at the State Agricultural and Technical Institute at Alfred, N. Y.; and Robert A. Reed, in charge of SCS operations in Allegany and Steuben (N. Y.) districts, is the district conservationist who helped. Together, they developed the basic teaching outlines in soil conservation and forestry from material both had been gathering.

Of the original two students, one is an SCS employee. Another worked for SCS last summer and two more were employed by the Allegany County district. Others are looking ahead to years of professional service in conservation work. Most of the students have come from farms in New York's southern tier. Outstanding progress made in applying soil and water conservation and good land-use practices in that area is one of the results of the institute.

In addition to field studies of conservation measures already applied to the land, the students get on-the-ground instruction and experience in farm planning and lay-out and operations. In studying farm needs as revealed by conservation surveys, they work out designs for structures and apply agronomic, forestry, and biologic recommendations. Classroom work includes a series of lectures by Reed and experts whom he invites as guest speakers.

3-HYDRANT POND.—After Howard Gilmore, orchardist of Westboro, Mass., had built a dugout pond so neighborhood boys would have a place to play hockey, he got some more ideas and through use of his orchard bulldozer expanded it into a 3-acre spring-fed pond planted with fish. From the pond he then laid 3,000 feet of transit pipe to supply three fire hydrants for the protection of three separate homes. The road is 50 feet below the pond and there is a hill between them. When he could not get an easement and go around the hill on a neighbor's land, he took the pipe right over the hill and made a siphon out of the system. It works perfectly.

GETTING A HEAD START.—The supervisors of the Elkhart (Ind.) Soil Conservation District have organized a Soil Conservation Achievement Club to get farmers to carry out simple soil conservation practices until the farm planner can assist them. A printed leaflet announces the purpose of the club and lists 10 practices that can be undertaken while working toward a complete farm conservation plan. The 10 practices: Sow cover crops, sod waterways, mow stubble clover after harvest, seed adapted legume-grasses, sow Balbo rye for spring pasture, drill grain on the contour, renovate pastures, set aside wildlife land, plant windbreaks, register woodland under State forestry law.



THEY CATCH THE EYE.—Supervisors of the Central Valley Soil Conservation District, with headquarters at Artesia, N. Mex., are proud of the soil and water conservation work being done by farmers in the area. They have had two large signs erected on farms where good soil conservation practices can be observed from the highway. The signs are located on highway No. 285, one north and the other south of Artesia. One of them shows in the picture above.

NATIVE GRASSES ARE GOOD BUSINESS.—Businessmen of Hamilton, Tex., are helping farmers and ranchers of the Hamilton-Coryell Soil Conservation District get native grasses seeded.

In 1949 the Hamilton Chamber of Commerce granted \$150 worth of grass seed to farmers who would sell all the seed they harvested, above what was needed for their own use, to other farmers and ranchers in the district.

A program to encourage the saving of likely seed plots for harvesting is paying dividends, too. Over 1,000 pounds of seed of Indian and bluestem grasses were harvested in November on the Lusk Randals and Mont Young farms.

Surveys show that there are 48,000 acres of land in the western section of the district which should be reseeded to native grasses.

This year Texas had its first big grass-seed harvest since 1941. More than 300,000 pounds of native grass seed were harvested in the Bowie, Jacksboro, and Henrietta areas, with the biggest amount coming from around Henrietta in Clay County.



WOODS WORTH CONSERVING.—As a home-hobby project for off-duty hours, Jesse McCartney, a foreman of building maintenance and construction for the Soil Conservation Service, Fort Worth, Tex., built an inlaid coffee table consisting of 5,555 separate pieces of 21 different kinds of wood from 5 States and 5 foreign countries. Nights and week ends over a 6-month period, and a lot of patience, were required. It has an intricate design that works out from a Texas star in the center. A musical-note motif is carried out in the leg pattern.

In the table are sugar pine, ponderosa pine, birch, maple, ebony, two kinds of mahogany, three kinds of oak, rosewood, cherry, walnut, cedar, spruce, poplar, mesquite, red and black gum, redwood and teak. Any why all this work? For a gift to the wife, of course.

PASTURES RESPOND TO GOOD SOIL.—In March 1949, Frank Smart, cooperater with the Checotah (Okla.) Soil Conservation District, started spring-sodding 110 acres of land he had taken out of cultivation.

Frank decided that he could save his soil and at the same time increase income by establishing pasture.

These 110 acres of Bermuda-grass have been cultivated once and have been fertilized with 20 percent superphosphate.

By the last of June, 40 head of whiteface cattle were grazing on this pasture. This is a record in the Checotah



Frank Smart, at right of driver, finds it easy to drop Bermuda-grass roots through pipe; they drop between the discs.

district for establishing a Bermuda-grass pasture. In the fall this pasture was overseeded to yellow hop and Ladino clover, and next spring it will be overseeded with Korean lespedeza. The 100 acres is expected to carry 220 head of cattle after the lespedeza and clover are established.

The tractor-planter planted 15 acres per day. The rear wheels were reversed and set to run over the roots that were covered by the disk in front of the rear wheels. This pressure brought the soil particles in close contact with the root system, and is one reason for growth starting so readily. The planter has been used on several other fields with equally good results.

For the past several years row crops had been grown on the soil where the Bermuda-grass pasture was established. Smart wanted to get his Bermuda pasture before he had lost most of his soil. That is another reason why the Bermuda-grass has done so well: Smart did not wait until he had lost all of his topsoil to establish his pasture. Fertile soil will produce pasture grasses more readily than soil that is sterile.

"I didn't want to try to establish a pasture in subsoil," said Smart. "If I had farmed this land 2 or 3 years more I would have been twice as long, or longer, in getting my pasture established. It is cheaper to establish a pasture where you can get good coverage established the first year. I figure I'm well on the way to a good pasture and more profit from the land I'm putting in pasture than if I were still trying to row-crop it.

"I would much rather try to establish a pasture on class III land than to try to establish a pasture on class V or VI land. It is cheaper and you will have a better pasture."

Good soil preparation is essential. These 110 acres were flat-broken, disked, and harrowed. There was no vegetation to compete with the growing Bermuda. The one cultivation given the Bermuda and good soil preparation eliminated other grasses and weeds.

Frank Smart has 30 acres in cropland this year that will be established in Bermuda-grass in the spring of '50. This will put his entire 310 acres in grass. A blue-stem meadow of 50 acres is included.

Many farmers in the Checotah district are becoming grassland farmers. They are the only farmers during the past 6 years of heavy rains in the region who have not worried when the rains came. Their land is anchored and there are no soil losses.

—DAVID H. MARKHAM

HOW FAST DOES A SOIL DRINK?—Not long ago a farmer in northwestern Oklahoma dropped in at the Soil Conservation Service headquarters at Woodward, Okla., with a problem for A. D. Bull, a technician assigned to the area.

The farmer explained that one of his irrigated fields had stopped producing. He had tried sweetclover to improve the soil, but it hadn't done any better than other recent crops, although he had irrigated well.

Bull put on his hat and picked up an odd-looking contraption from the table. He suspected the trouble but he had to make sure. This home-made arrangement of tin and clockworks would help him find out.



He had fashioned the gadget himself—an infiltrometer designed to measure the rate at which soil can absorb water. The rate at which soil can take water is called its permeability, the ease or slowness with which water or air can go in and out.

Bull's test revealed the trouble. It showed the percolation rate on the farmer's land to be 0.26 inch per hour. Nearby land which had not been cropped was tested too. It took water at the rate of 5 inches per hour.

Investigation showed "plow pan" to be the cause. It was the result of year-after-year plowing at the same depth. The plow pan averaged about 7 inches thick. Water was hitting the hardpan and spreading out. So were the roots of the sweetclover.

The farmer broke up the plow pan with chisel equipment. This allowed the roots to go on down and, by watering at the right times, the farmer was able to turn under a good growth the following spring.

To build the infiltrometer, Bull had gathered odds and ends, including an orange juice can, carburetor floats, an alarm clock, a sardine-can key, a welding rod, and a couple of metal drums. The tin can was fixed on the rod and this was attached to the minute hand shaft of the clock. This became the recording element and was mounted on a drum which was to hold a certain amount of water.

The drum of the recording element was connected by rubber tubing to two sets of floats made of corks and carburetor floats and located in two metal rings placed on the ground. These rings were leveled and 2 inches of water was poured in. As the water in these rings soaked into the ground the floats allowed the water in the tank of the recorder to flow down and keep the center ring at the same level.

The outside ring of water serves only to keep the water of the inside ring going down into the ground instead of sideways.

The recording drum is turned by the clock. A float in the recorder drum causes the recording needle to go down as the water recedes.

Development of the infiltrometer by Bull will be an aid to agriculture. The older method of testing for percolation required constant supervision for hours. Bull's instrument makes a record.



NATIONAL 4-H CHAMPS.—The eight national 4-H Club winners in soil conservation were honored at the twenty-eighth National 4-H Club Congress in Chicago. Each was the recipient of a \$300 college scholarship offered by the Firestone Tire & Rubber Co.

In the photograph they are looking at old-fashioned washboards used to illustrate the difference in speed of water runoff between horizontal and up-and-down furrows. In the center, with the pitcher, is Miss Jacque Mercer, who was Miss America of 1949.

Left to right: William A. Runsick, Tuckerman, Ark.; Lloyd Bradley, Tallevast, Fla.; Harold Beigert, Junction City, Kans.; Paul E. Spurrier, Union Bridge, Md.; Miss Mercer; Harvey Firestone, Jr.; Neil R. McAlpin, Polson, Mont.; Donis D. Patterson, Millersburg, Ohio; and Dick Ball, Yukon, Okla. Jimmy Mohr, of Evansville, Ind., another winner, was not present for the picture making.

NEW FHA BOOKLET.—A new publication replete with suggestions, information, and eye-pleasing pictures has been issued by the Farmers Home Administration under

the title, "Planning That Pays." It is the work of Paul V. Maris, who is a consultant on the staff of Dillard B. Lasseter, Administrator.

The Farmers Home Administration, as explained in the foreword, makes use of two tools—credit and supervision. Many borrowers "have had the benefit of soil conservation plans prepared by employees of the Soil Conservation Service."

On the inside front cover of this booklet are listed what are called "The seven 'sees' of the farm ownership job": (1) See that loans are made to eligible families who need the help, who are worthy of the help, and who understand the benefits and obligations involved in teaming up with the Farmers Home Administration; (2) see that the farms selected are farms on which it is possible for a qualified family to make a satisfactory living; (3) see that the farms are put in livable and operable condition at the start; (4) see that the investment is not greater than the value of the farm from an earning capacity standpoint; (5) see that a good farming system is adopted; (6) see that good farm management, home management, and money management methods are practiced; (7) see that farms are well maintained.